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# APPLYING INTERNATIONAL BUSINESS CONSTRUCTS TO OFFSHORE DEVELOPMENT

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## Abstract

*Although globalisation and international business have long been subjects of research, there is relatively little research on the practice of global IS development within these disciplines. This paper applies two widely cited constructs associated with international business theory – cultural distance and knowledge transfer – to instances of offshore IS development in the financial services industry in the UK to assess their applicability to the phenomenon of IS offshoring.*

*This study aims to broaden the understanding of social and organisational aspects of global sourcing of information systems and forms part of an ongoing interpretive research programme. Initial results indicate that knowledge transfer and cultural distance are particularly relevant to IS offshoring and can be used to increase our understanding of the challenges associated with this phenomenon. The interpretation of cultural distance as cultural ‘friction’ provides particular insights.*

## Key words

*Offshore; multinational enterprise (MNE); multi-shore; globalisation; cultural distance; knowledge transfer.*

## 1 INTRODUCTION

Suppliers of offshore IS services have graduated from simple sourcing models such as providing individuals to do specific tasks to complex and sophisticated cross-border contractual and resourcing arrangements with their customers. In effect, the industry exhibits all the elements of a globalised market (Tallman and Fladmoe-Lindquist, 2002). New forms of multi-national enterprise (MNE) have emerged - ‘pure-play’ offshore providers - originating in developing economies and dedicated to exporting labour and IT-enabled services to western economies. New project and organisational structures are required to take account of the dislocation of staff, which in turn demands new styles and ways of managing activities. Cultural traditions are often disrupted, both for offshore practitioner who come to reside in an onshore location and for the onshore individuals who encounter them. The effects of such change is still relatively under-researched (King and Torkzadeh, 2006).

By contrast, globalisation and international business have long been the focus of research. This ranges from early studies of the theory of the MNE (Hymer, 1960; Dunning, 1973; Perlmutter, 1969; Buckley & Casson, 1976; Teece, 1977) to more recent work by Tollentino (2002) and Rugman and Verbeke (2003). Perspectives include political, cultural, and economic dimensions, illustrated with multiple case studies that are company, industry and temporally specific. Three research strands predominate, termed in this paper economic, organisational and international business perspectives. Economic theories help explain how and why global organisations evolve and function, particularly with respect to their investment and economic decisions (for example, what drives them to invest in a particular location). Organisational theories are mostly concerned with explaining how multi-national companies should be organised and

managed. International business theories concern aspects of global organisations that depend on cultural affinity and difference between parts of the organisation, and the challenges associated with knowledge transfer across inter-organisational boundaries. This latter research strand has particular resonance for those interested in IS offshoring.

To date, few scholars have applied international business theory to offshore companies, or to this sector as a particular example of globalisation. This may be because it does not always conform to the more traditional patterns of multinational evolution – for example, many non-western offshore providers adopt an exclusively export-focused approach to international growth. Since international business theory and associated constructs have proven valuable in understanding how aspects of established global businesses function – for example, in the area of strategic human resource management - it may be that they can be used to provide similar insights for newer offshore IS organisations. The constructs of knowledge transfer and cultural distance, frequently cited in international business studies, are of particular relevance to IS offshoring, which typically involves actors who are physically and culturally separated and who depend greatly on effective knowledge transfer across borders and time zones.

For that reason, this study looks to provide insights on globally distributed software development by applying these constructs to two case studies of IS offshore activity. It forms part of an ongoing interpretative research programme that is assessing the various impacts of IS offshoring on its different stakeholders and therefore presents a preliminary framework to support further research in this area, with a view to further validation and empirical study.

Both ‘pure play’ offshore IS providers and ‘multi-shore’ organisations are considered. Multi-shore organisations are those that have originated in developed economies and which typically provide offshore software development as part of a wider portfolio of consulting and outsourcing services. Pure-play and multi-shore organisations use similar approaches to meet their clients’ sourcing demands, such as their use of a global development model (GDM) to provide consistent IS services.

The paper is structured as follows: an introductory section provides the context and scope of the research. This is followed by a brief review of the literature on IS offshoring and international business. Subsequent sections categorise theoretical antecedents and relevant constructs, and present an overview of the research method and empirical material. The final section of the report presents conclusions and an agenda for future research.

## **2 LITERATURE REVIEW AND THEORETICAL ANTECEDANTS**

### **Literature on IS Offshoring**

Offshoring occurs when a company engages resources from another country – most often an economy where the cost of IS labour is significantly lower - to conduct software development and maintenance activities on their behalf. Offshoring can be insourced, where all team members are employees of the same parent organisation, or outsourced to a specialist offshore services supplier. Whether in-sourced or outsourced, offshore IS teams face challenges not associated with more traditional co-located development (Dubé & Paré, 2001), particularly where the cultures of the participants differ. Global sourcing is taken in this paper to include all types of outsourcing other than onshore outsourcing (Tsotra and Fitzgerald, 2006).

Although there are studies that address specific aspects of offshore development - for example, the role of development methodologies and techniques (Ramarapu et al, 1997; Harmsen et al, 2007) – more often scholars describe the rationale for offshore development, its associated benefits, the risks of offshore development and key success factors. Most begin by noting that offshoring is one of the fastest growing phenomena in IS in recent years and that it is an accepted component of modern software development practice.

The fundamental business question associated with offshore software development is whether the associated risks are outweighed by the benefits (Delmonte & McCarthy, 2003). The literature shows that

the primary rationale for companies using offshore services has been the search for cost efficiencies through labour arbitrage.

There is consensus also on the main categories of risk associated with offshore development. McFarlan (1981) describes four categories of risk associated with any systems development project – size and complexity of project, project structure, technology used and user factors (number of user interactions and number of user sites) – and these equally apply to offshore projects (Rajkumar and Dawley, 1997). Ravichandran & Ahmed (1993) identify three special problems associated with distributed software development as language barriers, differences in laws and regulation, and fragile infrastructure. The key success factors in global software development are derived from an analysis of the risks. Thus, four critical success factors are identified as maturity of the management team; level of strategy and commitment demonstrated by senior management; maturity of the organisation's processes; clarity of the objectives and level of preparation (Delmonte & MacCarthy, 2003).

There are fewer studies that look at the wider implications of global sourcing of IS. Recent research is providing new insights: the related papers by Farrell (2005), Levy (2005) and Doh (2005) highlight some of the emerging social issues associated with IS offshoring - Levy in particular stressing the tensions and social cost of wholesale adoption of the practice. Ramesh (2004) and McMillin (2006) take a politicised view, commenting on the negative cultural consequences of offshoring for Indian call centre workers engaged in business process outsourcing. In an empirical study, Oshri et al (2007) take a broadly organisational perspective when looking at how expertise is developed on onshore/offshore IS projects.

### **Literature on International Business**

Two primary research strands highlight themes that contribute to research on global sourcing of IS. The first presents an organisational view of international business, addressing issues relating to structure and interaction between headquarters and subsidiaries of global firms (Perlmutter, 1969; Hymer, 1976; Hedlund, 1986). Although initially viewed in hierarchical terms, global organisations are now viewed as a network of differentiated intra- and inter-firm relationships (Bartlett and Ghoshal, 1989; Ghoshal and Bartlett, 1990; Tolentino, 2002). This acknowledges that foreign subsidiaries have resources and expertise that enables them to play an active role in the success of the organisation, for example by creating firm-specific advantages (FSAs). Further, more effective organisation of knowledge and innovation and more widespread sharing of technology across the network helps diffuse new learning quickly across boundaries.

The second perspective overlaps with theories of globalisation that take a strategic view of the world as a single market in which to do business (Tallman and Fladmoe-Lindquist, 2002), and rests upon the basic premise that replication throughout the firm of advantageous, intangible, knowledge-based assets is a prerequisite for organisational success (Martin and Salomon, 2003). Kogut and Zander (1993) assert that the ability to transfer knowledge efficiently across borders, as opposed to market inefficiencies, is what gives rise to MNEs – the assumption being that the primary advantage that a firm brings to global markets is its possession of superior knowledge. Elaborating, they note that the characteristics of knowledge influence the ability to transfer it.

More recent research on globalisation and international business acknowledges that there has been significant change in how MNEs now operate, in part because of technological advances. Doh (2005) expresses this viewpoint as follows:

“Moreover, as Levy (2005) notes, the development of communications technologies and the requisite mobility of labour have allowed for an accelerated internationalization of production that accords neither with the product life-cycle nor the sequential internationalization perspective. Indeed, some have argued that many firms are now ‘born global’ (Knight and Cavusgil, 2004) and that the notion of sequential internationalization – whether on a country, industry, or firm scale – is outmoded and anachronistic.”

### **Knowledge Transfer**

A good deal of the research in knowledge transfer differentiates between tacit knowledge – that which is implicit and unwritten in the operation of the firm – and knowledge as a public good, or explicit knowledge – which can be codified and methodically structured and taught and is thus easily (and in theory freely) transferred and hard to protect. Wieandt (2007) notes that tacit knowledge is only learnable through experience and social interaction. Empson (2001) distinguishes between technical knowledge – shareable skills such as programming or knowledge of firm-specific process, derived from formal learning or experience – and client knowledge – relating to functional understanding of an industry sector and personal knowledge of a specific client and of the people and politics of an organisation.

Research shows that cross-border movement of tacit knowledge is possible but not easy and is assisted by formal and informal corporate mechanisms for integration. In an empirical study, Teece (1977) estimated that the costs of technology transfer ranged from 2% to 59% of total project costs, these costs arising from the efforts of codifying and teaching complex knowledge to users.

Buckley and Casson (1976) comment on the increased expenditure required where the personnel responsible for encoding and decoding the information have different backgrounds or operate in a different environment, thus introducing implicitly the concept of cultural distance.

### **Cultural Distance**

This widely used construct helps measure the extent to which cultures are similar or different (Johanson & Vahlne, 1977; Hofstede, 1980; Shenkar, 2001). Cultural distance is analogous to what Johanson and Vahlne termed ‘psychic distance’, which they viewed as one of the main factors determining the pace and direction of internationalisation of business:

“The psychic distance is defined as the sum of the factors preventing the flow of information from and to the market. Examples are differences in language, education, business practices, culture and industrial development.” (Johanson & Vahlne, 1977)

Shenkar (2001) notes that the construct of cultural distance has been applied to most business disciplines to provide insight into a range of research questions from global expansion to subsidiary performance. He sets out some of the limitations of thinking on cultural distance, attributing these to a series of illusions and false methodological assumptions that tend to distort empirical results. He suggests replacing the ‘distance’ with ‘friction’ as the underlying metaphor for cultural differences to underline the point that cultural differences matter only when different cultures come into contact. It is this interpretation of the construct that is used in this research, since the case studies involve joint onshore offshore teams and the objective is to assess the level to which cultural differences impedes this form of global software development.

## **3 RESEARCH PARADIGM AND EMPIRICAL MATERIAL**

This study aims to broaden the understanding of social and organisational aspects of global sourcing of information systems and forms part of an ongoing wider research programme that is assessing the various impacts of IS offshoring on its different stakeholders. It is firmly interpretative in approach, and while it uses grounded theory techniques for data collection and analysis, it adopts a case study-based research paradigm.

The reason for using an interpretive case study is because it can potentially distil the experiences of practitioners and thereby develop a theory that is both relevant and grounded (Benbasat et al, 1987). Yin (2002) notes that the case study benefits from the prior development of theoretical propositions to guide data collection and analysis, although he is careful to stress that this is not essential. Accordingly, this study is inductive rather than hypothetic-deductive, an approach that is suited to grounded theory analysis. It is acceptable to mix and match research methods in this way, since the research strategies are not mutually exclusive (Mingers, 2001).

Two recent examples of sizeable offshore IS projects were selected. The use of two case studies facilitates the continuous comparison of evidence, and facilitates control of the conceptual level and scope of the findings (Orlikowski, 1993).

### **Overview of case studies**

The companies selected in each of the case studies implemented development projects using offshore outsourcing over a two year period in 2005 and 2006. In each instance the software development was mostly outsourced to a multi-shore organisation, a global systems integrator headquartered in Europe. Both developments were of a similar scale – over 10,000 days of development effort – and both used similar development methodologies (IBM's Rational Unified Process (RUP)) although in different technology environments (Java for one; Assembler and COBOL for the other). Both projects used offshore developers from India located in Mumbai and on-site in the client's offices in the UK and Belgium. Both organisations have in-house IT departments and neither had used offshoring extensively before. The projects were therefore philosophically similar (Orlikowski, 1993), drawing on the same basic software development approach of use cases, separation of process and data, and iterative development phases, even though one project (MARS) involved the development of a package-based system to support a new lending product and the other (EUROPA) was a custom development of an existing systems software suite.

The fieldwork was conducted between autumn 2006 and summer 2007 and consisted primarily of semi-structured interviews with practitioners engaged in the projects. These ranged from junior offshore programmers through to senior programme managers (including the programme director in the case of MARS, and the CIO in the case of EUROPA). The practitioners were all involved in project development or project management roles. Interviews focused on employees' experiences of the project, categorised as economic, political, organisational and operational perceptions. Interviews were recorded and transcribed, and NVivo software was used to categorise and analyse the data.

Because the researcher had extensive contact with the offshore organisation, it was possible to conduct interviews with most of the main actors in both organisations. The researcher's position in these developments was existential – that is, observation was made from outside the projects. The data used in this study represents a sub-set of the overall volume of data gathered.

## **4 CONCLUSIONS**

Although the data analysis is not yet complete, it is clear that many of the theoretical antecedents used in studies of globalisation and international business are useful in analysing offshore IS sourcing. For the cross-section of the overall research addressed in this paper, the constructs of knowledge transfer and cultural distance (in Shenkar's interpretation as cultural 'friction') prove highly effective for providing insights to the IS offshoring phenomenon.

### **Conclusions regarding Knowledge Transfer**

The research confirms that the process of knowledge transfer, and the nature of the knowledge being transferred, remain central to assessing the effectiveness of global software development. This is because the communication of ideas, instructions, plans, feedback and so on is a key determinant of the effectiveness of globally distributed IS projects. Two primary conclusions emerge.

First, this research highlights the fact that the demands for knowledge transfer are becoming increasingly complex. For most of the MARS project, for example, there were six independent and separate parties involved - two onshore and four offshore. This demanded a network of interconnected knowledge flows across project participants and externally with third parties - illustrating a heterarchical information exchange rather than hierarchical knowledge flows (Hedlund 1986). While techniques and tools for enhancing effective knowledge transfer continue to improve – for example the use of instant messaging to allow online dialogue between participants in real time - this remains a particular challenge.

Second, transferring knowledge about the client's culture, and the way the client operates – termed 'client knowledge' by Wieandt (2007) – is relatively more important than the transfer of technical or functional detail. Technology knowledge transfer – such as details of programming approaches, or actual code – proved straightforward. The MARS project manager introduced a modified version of RUP which proved successful in codifying technical knowledge (the modified RUP has since been incorporated with the offshore providers distributed development methodology). Similarly, there appeared to be less need for an offshore partner to have functional knowledge (understanding of the client's industry). One of the Indian team leaders makes this comment:

"It is primarily technical expertise we look to and if anybody is insisting that he wants also to work in a business functionality site then he can work towards it but I think the first focus – the primary focus - is purely technical."

Knowing the way the client operates, however - and understanding the culture of the client organisation - is key to success. In an explicit acknowledgement of this, the client for project MARS encouraged all offshore developers to spend time onsite in the UK:

"...nearly all of the offshore people were at some stage on site. And that really helped integrate the team. They all knew what it is we were building. They were all very comfortable with the (client) culture, and they had what I call the vision, which is very important."

The parties involved in project EUROPA came to a similar conclusion, as described by the onshore project manager:

"My concerns at the time were because of the highly individualistic nature of the solution achieving knowledge transfer and doing it all offshore was going to be impossible and we ... had a number of meetings and presentations where I put that point of view ...

The eventual solution that we constructed probably was ... a largely offshored Indian team doing what might be considered commoditised migration work but much of the intellectual rigour and analysis was to be done onshore with Indian people coming over - but being led by the legacy (client) capable people ... because they were the only people who would have the ability to do that."

The experience in both projects suggests that co-location of onshore and offshore experts important to ensure successful transfer of tacit client knowledge.

### **Conclusions regarding Cultural Friction**

Shenkar's notion of cultural friction illustrates the effects on different cultures of interaction with the other. The data from this research showed that these effects could be significant, even if they are not always obvious. For example, the offshore (Indian) practitioners absorbed more than working practices from their onshore colleagues: there was a more subtle recalibration of expectations which has potentially far-reaching macroeconomic consequences. One of the offshore (Indian) managers made the following observation:

"I view that people are getting more exposure to work with the behaviour and way that Western people work and so they definitely feel that there should be some balance between personal and professional life."

This resonates with D'Mello's (2005) views on issues of identity and related tensions, and highlights wider social issues that result from globalisation.

In their wide ranging study on workers' experiences of offshoring, Cohen and El-Sawad (2007) note that although they did not ask specific questions about culture, this turned out to be a central theme for both onshore and offshore respondents. Similarly, in this research, the issues associated with cultural friction were always to the fore, even when they were not directly under discussion. Almost all of the interviewees noted the challenges associated with the different cultural viewpoints of onshore and offshore workers.

The most sensitive aspect related to competence (also noted by Cohen and El-Sawad) – with offshore respondents believing themselves capable of more than their onshore colleagues allowed them to. While this point of view was balanced to a certain extent by the willingness of some onshore managers to develop the skills of their offshore colleagues by giving them challenging things to do, an underlying current of caution is evident in the response from onshore (western) practitioners:

“...what I observed was no lack of intelligence in the people, they were very bright, very keen to learn. What they very much lacked from my perspective was a consultancy perspective by which I mean their familiarity with major change programmes, change projects of this nature, was lacking commensurate perhaps to their technical skills. So what we found, and this is perhaps something of a cliché but true for that, they were very good if they were given a very clear scope in terms of reference but given a blank sheet of paper they really struggled to create a framework for which to take forward.”

The view from offshore was very different. In response to a question about perceptions of the Indian organisation's dependence on UK colleagues, an offshore senior manager's response was:

“Yes, they (*UK colleagues*) have to be onsite but I don't see any reason why an Indian person can't go on site and do that (*delivery management*) too. We can definitely find some delivery managers from India going abroad and working with clients, but then the only challenge is that typically it is very senior people who would be doing delivery management role and they are not very keen (*to travel*). The number of people who would like to go to UK and stay there for long term basis is low, that's one challenge. Secondly, we really need to get people experiencing client management, sometimes that's another challenge.

Despite this important difference of opinion, there was no evidence of patronisation or post-colonial behaviours. The research found that onshore and offshore workers engage professionally and socially as would most young people thrown together on an extended overseas assignment:

“But since we are all new here and we never knew anyone so we got fantastically, well we used to have cricket tournaments every afternoon during the summer when the days were long or something. So that was quite, you know... And mostly we didn't have much ties because we don't know anyone, so weekends like we would go out to the pubs or go to someone's place or, and after that go and play cricket and all this stuff, so...”

This perhaps has a broader implication: as cultural reference points become more global (Internet, global TV, international sport, popular music), cultural differences tend to diminish, and knowledge transfer becomes a little easier.

### **Areas for further research**

This study forms part of an ongoing research programme to assess various impacts of IS offshoring on different stakeholders. Further research will validate the conclusions drawn in this paper, as well as broadening the scope to address the economic, political, organisational and operational impacts of offshoring on the organisation and on IT practitioners. A particular emphasis will be placed on Shenkar's concept of cultural friction, which has resonance in the business of offshore IS development.



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